

## Claims:

## 1. Angular motion driving mechanism comprising:

- a gear wheel (GW) mounted on a supporting structure (SUP) for intermittent rotational movement in clockwise and counter-clockwise directions within an arc bounded by first and second angular positions ( $\alpha_1$  and  $\alpha_2$ , respectively) of the gear wheel (GW) with respect to the supporting structure (SUP);
- a drive motor (DM) carried by the supporting structure (SUP) having an active mode and an non-active mode;
- a driving gear (DG) being drivingly coupled to the drive motor (DM) and to the gear wheel (GW) imparting rotational movement to the gear wheel (GW) from said first to said second position ( $\alpha_1$  to  $\alpha_2$ , respectively) in an active mode of the drive motor (DM);
- a coiled torsion return spring (RS), one end thereof being connected to the gear wheel (GW) and the other end thereof to the supporting structure (SUP), which is flexed against its bias at rotational movement of the gear wheel (GW) from the first to the second angular position  $\alpha_1$  to  $\alpha_2$ , respectively, in the active mode of the drive motor (DM) and relaxes in the non-active mode of the drive motor (DM) by urging the gear wheel (GW) to return from the second to the first angular position ( $\alpha_2$  to  $\alpha_1$ , respectively), characterized by
  - at least a first flexible end stop being constituted by a first member (BT1) structurally fixated to the gear wheel (GW) and in said first position  $\alpha_1$  engaging with a first embossement (E1) of said supporting structure (SUP) to block rotational movement of the gear wheel (GW) by said

coiled torsion return spring (RS), said first member (BT1) being flexed at contact collision with said first embossement (E1).

5 2. Gear wheel (GW) for use in an angular motion driving mechanism according to claim 1, characterised by said gear wheel (GW) being constituted of flexible material, said first member (BT1) being an integral part of said gear wheel (GW).

10 3. Gear wheel (GW) according to claim 2, characterised by said first member being constituted by said first member being constituted by a first blocking tooth (BT1) integrally formed in the gear wheel (GW) by an incision of a first slit (S1), having a width chosen to absorb shocks at said contact collision without exceeding the breaking limit of the first blocking tooth (BT1).

20 4. Gear wheel (GW) according to claim 2 or 3, characterised by the first blocking tooth being integrally formed in the gear wheel (GW) by said first slit (S1) and a second slit (S2).

25 5. Gear wheel (GW) according to claim 4, characterised by said first and second slits (S1 and S2, respectively), each have a width increasing radially towards the rotation axis of the gear wheel (GW).

30 6. Gear wheel (GW) according to claim 5, characterised by said first and second slits (S1 and S2, respectively), each ending into a cavity having a radius being substantially larger than the width of the slits S1 and S2.

35 7. Gear wheel (GW) according to one of claims 4 to 6, characterised by a gear tooth segment (GTS) covering an

arc of substantially  $180^\circ$  being separated from said first blocking tooth (BT1) by said first slit S1 and defining an arc of equal magnitude between the first and second angular positions ( $\alpha_1$  and  $\alpha_2$ ) of the gear wheel (GW).

5

8. Gear wheel (GW) according to claim 7, characterised by the gear wheel (GW) having a circumferential radius within said arc which is substantially equal to the radial length of the first blocking tooth (BT1) and larger than the circumferential radius of the remaining part RP of said gear wheel (GW).

10

9. Gear wheel (GW) according to one of claims 4 to 6, characterised by a gear tooth segment (GTS) covering an arc wider than  $180^\circ$  being separated from said first blocking tooth (BT1) by said first slit (S1) and defining an arc of equal magnitude between the first and second angular positions ( $\alpha_1$  and  $\alpha_2$ ) of the gear wheel (GW), the radial length of the first blocking tooth (BT1) being larger than the radius of the gear wheel (GW).

20

10. Gear wheel (GW) according to claim 8 or 9, characterised by the radial length of the first blocking tooth (BT1) differing from the radius of the remaining part (RP) of said gear wheel (GW) by at least part of the radial length of said first embossement (E1).

25

30 11. Gear wheel (GW) according to claim one of claims 1 to 10, characterised by an axially cylindrical rim (RIM) integrally structured with the gear wheel (GW) and extending at the rear side thereof being provided with an opening towards the first blocking tooth (BT1).

35

12. Gear wheel (GW) according to one of claims 1 to 11, characterised by a structure, which is symmetrical with

respect to a centre axis (CA), having a second flexible end stop being constituted by a second member (BT2), which is located symmetrically to said first member (BT1) and in said second position α2 engaging with a second embossement (E2) of said supporting structure (SUP) to block rotational movement of the gear wheel (GW) by said drive motor (DM), said second member (BT2) being flexed at contact collision with said second embossement (E2) in the active mode of the drive motor (DM).

13. Gear wheel (GW) for use in an angular motion driving mechanism according to one of claims 1 to 12, characterised by a diameter and thickness of the gear wheel (GW) in the order of magnitude of 5,5 centimeter and 0,5 centimeter, respectively, a width of said first and second slits (S1 and S2) in the order of magnitude of 0,7 millimeter, said first embossement (E1) and said first blocking tooth (BT1) having a common contact surface area with a radial length and tangential thickness in the order of magnitude of 14 and 6 millimeters, respectively.